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# SERIOLINE FISHES

(YELLOWTAILS : AMBERJACKS)

FROM THE

# WESTERN INDIAN OCEAN

By

**J. L. B. SMITH**
Research Professor and South African Council
for Scientific and Industrial Research Fellow in Ichthyology.

Illustrations by Margaret M. Smith.

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I am indebted especially to Mr. Alf Johnson of Port Elizabeth for valuable specimens, and to my wife, Margaret Mary Smith, for the illustrations, also to Mr. D. J. Banister-Jones of Hibberdene for the photographs in Fig. 2.

# SERIOLINE FISHES

(Yellowtails : Amberjacks

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by J. L. B. SMITH,

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Family CARANGIDAE

Subfamily Seriolinae

Among the most esteemed by the big game angler, these fishes are of world-wide distribution, and the various species (commonly named "Yellowtail" in South Africa), are all built on much the same plan, the caudal lunate, the dorsal and anal fins long and mostly low. All are powerful swimmers, presumably able to cover vast distances, and within each genus and subgenus the different species do not differ widely from one another. As a result, there has been a general tendency for systematists to identify species, even in remote parts, with those already known. The literature reveals astonishingly few detailed original descriptions of these fishes, and there has been a regrettable tendency merely to reproduce early illustrations that are technically good, rather than to provide originals of actual specimens, which has caused widespread confusion. Two genera are treated here, viz. **Seriola** Cuvier, 1817 and the monotypic **Seriolina** Wakiya, 1924; **Zonichthys** Swainson, 1839 is regarded as Atlantic only, while the pelagic monotypic **Naucrates** Rafinesque, 1810 is so well known as scarcely to need inclusion here.

I. Gillrakers well developed, total always more than 10 on 1st arch. Anal rays more than 18, A base more than half that of 2nd D. P 2, 19, tip not or barely to origin 2nd D. 50 or more pyloric caeca ..... **Seriola**

II. Rakers feeble, total less than 10 on 1st arch. A 15-17. A base not half that of 2nd D. P 2, 17, tip well beyond level origin 2nd D. About 20 pyloric caeca. ..... **Seriolina**

Genus **Seriola** Cuvier, 1817.

Genotype **Caranx dumerili** Risso, 1810. Rather elongate, moderately compressed body with small cycloid scales. Head naked, except cheek and upper part of opercle. Bands of villiform teeth in jaws, in rhombic area on vomer with long narrow process behind, on palatines, pterygoids and tongue. Gillrakers well developed, sometimes fewer with age. 1st D of 5-7 spines, an antrorse spine in front, often concealed. 2nd D long and low, of 27-35 rays, higher in front, lobe never equals body depth — A similar, 19-22 rays. Pectoral and pelvic short, caudal lunate. L.l. curved in front, no scutes, sometimes ends in keel on Cd base. 5-6 species known in the Atlantic, 6-9 in the Indo-Pacific, 5 certainly known from the W. Indian Ocean, other descriptions and records not at present identifiable. Williams 1958, 369-430 has given a detailed revision of the Carangidae of British East Africa, but apparently did not find **Seriola** Cuvier, although the literature holds records bracketing that area. We record 2 species from there.

Two species in **Seriola sensu lato** have hitherto been recognised in South African seas — the more abundant has long been identified with the Western Atlantic **lalandii** C & V, 1833, the other with **bonariensis** C & V 1833, from the same area. Our investigations in recent years have, however, shown that at least five, possibly six species occur in the W. Indian Ocean. The most southerly form, hitherto named **lalandii** C & V, may be that species, but as reliable detailed descriptions of adults from the type locality are not available, it seems desirable that our fish should provisionally bear the name **pappei** Castelnau, 1861. The other much rarer form, hitherto recorded only from Natal as **bonariensis** C & V, has been found to range from Knysna (34°S) to Kenya. Of three other species found to occur in the W. Indian Ocean, two could with equal justice be synonymised with known species, either from the Atlantic or the Pacific, but in view of the lack of reliable information and illustrations, all species are described in detail and illustrated, and four at present named as new. Even if only one or two of these names may survive, this method has the advantage of eliminating confusion. It is far easier to arrive at finality in synonymy from accurate accounts, than it is to disentangle what often proves to be unjustified synonymising of widely separate forms.

The species of **Seriola** appear to fall into at least 3 reasonably well defined groups. **Regificola** Whitley, 1931 lists the slender **grandis** Castelnau, 1872 as the type. With **dumerili** Risso as the type of **Seriola**, I consider distinction for the species with deep bodies and high dorsal lobes equally justifiable. With only regional material available, this cleavage is at present kept at subgeneric rank as follows :

A. Depth less than $\frac{1}{4}$ of body length. 2nd D origin midway between A and pelvic origins. Pelvics not reaching halfway to A origin. D lobe not $\frac{1}{3}$ length of 2nd D base. ..... **Regificola**

B. Depth more than $\frac{1}{4}$ of body length. 2nd D origin nearer pelvic than A origin. Pelvics reach halfway to A origin or beyond :

I. D lobe markedly longer than P, and exceeds $\frac{1}{3}$ of 2nd D base. ..... **Buphthalmus nov.**

II. D lobe not longer than P and less than $\frac{1}{4}$ of 2nd D base. ..... **Seriola**

Subgenus **Regificola** Whitley, 1931.

I. Head 1.2 times body depth, $2\frac{2}{3}$ in trunk. Depth 4.4-4.8. D and A lobes shorter than P. ..... **pappei**

II. Head equals body depth, $3\frac{1}{4}$ in trunk. Depth 4.2. D and A lobes both exceed P. **banisteri n. sp.**

**SERIOLA PAPPEI** (Castelnau), 1861. **Scomber capensis (non** C & V) Pappe, 1856, 23. **Lichia pappei** Castelnau, 1861, 40. **Seriola lalandii (non** C & V), Gilchrist 1916, 9 ; Thompson 1918, 101 : Barnard 1927, 55 : Biden 1930, 69, Pl VIII : Smith 1949, 221, f 537. 3 specimens from Algoa Bay, 550, 560, and 1000 mm. total length, (445, 460, 820, standard length) described, data below given in that order. D VI-VII+I 33-34. A II+I 21-22. P 2, 19. Gillrakers 5-6+1+15-17 plus 4-5 knobs, total 22-23 formed rakers on whole arch. Depth 4.4; 4.5; 4.4, head 3.8; 3.8; 3.9 in body to end of keel on caudal base, depth 4.8 in length to end of mid caudal rays. Eye 6.5; 6.5; 9 in head, 2.3; 2.2; 3.5 in interorbital, which about equals snout. Depth end of maxilla about equals eye, 2.5 in snout in adults. P about 2, V about 1.7 in head. Distance from apex of P to 2nd D origin 3 in P. Peduncle depth 1.1; 1.5; 1.5 times eye.

Nostrils close together, subequal, $\frac{1}{3}$ pupil width, 1.5 times further from snout tip than eye. Maxilla below front of eye. Whole cheek scaly, about 12 series, wide preopercle flange and rest of head naked. L.l.

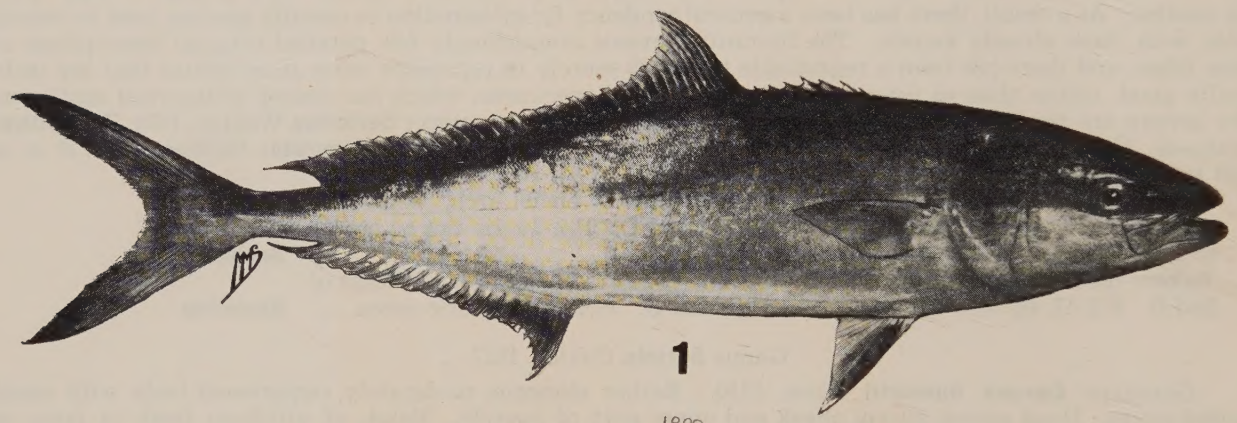


Fig. 1. **Seriola pappei** Cast., 820 mm. (Algoa Bay).

little curved, undulate, reaches middle of side about below 15th dorsal ray, above front of anal, curved part slightly less than straight, end of L.l. on caudal base forms slight keel. D spines low, 3-4 longest, little more than eye. Front of D and A little elevated, last D and A ray prolonged, height of dorsal lobe 2.0; 2.1; 2.2, of anal lobe 2.6; 2.5; 2.6 in head, last ray in each fin about twice eye, longer with age. 2nd D origin 1.05-1.2 times further from origin of upper caudal lobe than snout tip. Origin of anal lobe 1.8-2 times as far from snout tip as origin of lower Cd. lobe. Pelvic origin slightly behind P origin, caudal lunate.

Colour: somewhat variable. Alive, above olive green with blue and purple sheens, after death upper part blue to bronzy, sharply distinguished as a zone by a line from front of snout along lower edge eye then on along mid side body on straight part of L.l. to tail, lower part lighter, with rosy reflections. Cd bright yellow. D & A bluish basally, margins yellow, pectoral and pelvic yellow. There is usually a darker area from snout through eye above pectoral, and, in the young, in life, on the division of the two colours on the body, a bright yellow stripe that becomes less with age.

Found from the Cape to Durban, sometimes in vast shoals, though rare in Natal, evidently prefers cooler waters. Ripe fishes in January to March, very young not yet found. Attains at least 1500 mm. and a weight near 100 lbs. The South African specimens have long been identified with the W. Atlantic **lalandii** C & V 1833, the type from Brazil. The original description is hardly diagnostic, giving D VII, 1, 31 and A II+I 20. Gunther 1860, 463 lists **lalandii** C & V, as ranging from Brazil to Cape of Good Hope and Japan, but this is not reliable, e.g. he places **aureovittata** Schlegel, 1844 in the synonymy of **lalandii** C & V, which it can scarcely be. There does not appear to be any recent reliable detailed description, nor reliable illustrations, of **lalandii** C & V, from the type locality. Mather 1958, 1-13 has given a broad outline of the W. Atlantic species of **Seriola** Cuvier, but no detailed account of **lalandii** C & V, about whose positive identity he appears to be in some doubt. From the data he gives on specimens 16-24″ length from Brazil, having regard to oceanic conditions about the Cape, and from the risk involved in synonymising widely separated populations, I consider it at present advisable to regard our "Yellowtail" as distinct. The Australian **grandis** Castelnau, 1872 may have to yield to **pappei** Castelnau, 1861.

**Seriola banisteri n. sp.**

D VI+I 34 (VII?). A II+I 21. Depth equals head, 4.2 in body, 4.5 in length to hind edge Cd fork.

Eye 7 in head, centre 1.4 times further from hind margin of head than snout tip. Maxilla barely below front of eye, depth end exceeds eye, about 2.2 in snout. L.l. smoothly curved in front, straightens on mid side below middle of soft D, forms prominent keel over Cd base. D spines low, lobe of 2nd D and of anal 1.9 in head, 1.1 times P. 2nd D lobe 3.2 in base of 2nd D. 2nd D origin 1.2 times further from upper Cd lobe than snout tip. A origin 1.8 times further from snout tip than origin of lower Cd lobe. P 2.1 in head, distance from P apex to level origin 2nd D 1.6 in P. Pelvic 1.8 in head, its origin well behind P base, its apex behind P apex.

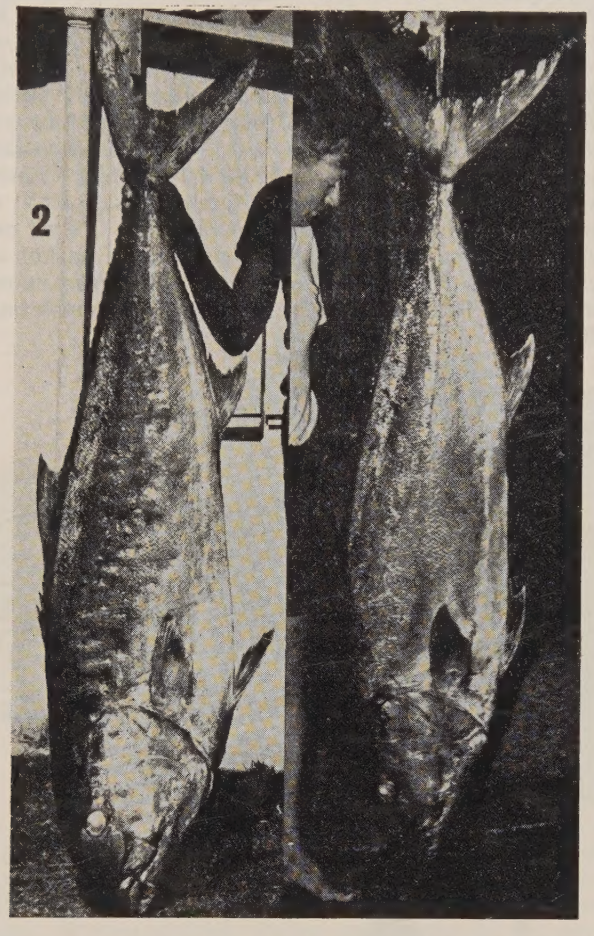


Fig. 2. **Seriola banisteri n. sp.** 1930 mm. Type (Natal).
(On right, whole fish hanging vertical: on left, gutted fish resting on snout, body slightly incurved, head nearer camera.)

Colour, alive, reported bronzy above, silvery below, no yellow anywhere. One specimen, 1930 mm. total length, weight 129 lbs., caught off Hibberdene, Natal, 28. VI. 59, by R. Banister-Jones, several hooks found in mouth and stomach. Some data taken by captor from freshly landed fish, remainder from photographs, specimen unfortunately not preserved, thus no data on gillrakers. In Lourenco Marques, in June 1951, a few moments before my departure on a liner for northern Mozambique, a Portuguese deep-sea fishing craft came in from a voyage to the north (about 24°S) and the crew brought along a fish of at least 140 lbs. They stated they knew the fish, only rarely caught, and all large. Clearly a **Seriola,** it was different from any I had previously seen (and almost certainly identical with the fish now described). Circumstances were such that I could do no more at that time, but have constantly sought further specimens, none appearing until now. This species clearly inhabits warmer seas than **pappei,** to which it is most closely related, but it differs sufficiently to justify at least provisional specific distinction, as here proposed. **pappei** apparently shows little variation in body shape or dimensions beyond 500 mm., so it is possible that the observed differences in **banisteri** are not merely growth changes. The photograph in Fig. 2 is at present the type.

Subgenus **Buphthalmus nov.**

Genotype **Seriola songoro n. sp.** — defined as in key to sub-genera. 2 species in our area, possibly 2 in Atlantic.

I. Head $2\frac{3}{4}$-3 in trunk. Apex of pectoral not to below 2nd D origin. Maxilla to front or mid pupil. ..... **songoro n. sp.**

II. Head 2-$2\frac{1}{4}$ in trunk. Apex of pectoral to or beyond below 2nd D origin. Maxilla barely to front eye. ..... **bovinoculata n. sp.**

**Seriola songoro n. sp.**

**Seriola bonariensis (non** C & V) Norman 1922, 321 (Natal). Barnard 1927, 556 (Natal): Smith 1949, 222, Pl 26, f 538 (S.Af.), and 1953, Pl 105, f 538 (Kenya). 3 specimens described below, 450, 505 and 880 mm. total, 385, 430 and 740 mm. standard length respectively, data below in this order, specimens from Mazeppa Bay (33°S), Knysna (34°S) and Shimoni (4°40′S) respectively. The type, 505 mm. total length, Knysna. D VII+I 29-30. A II+I 20. P 2, 19. Gillrakers 7-8+1+17-18+1-2 knobs, 25-26 formed rakers on whole arch. Depth 3.3, 3.2, 3.7 : head 3.7, 3.8, 3.7 in body to end of keel at Cd base. Eye 4.6, 4.5, 4.9 in head, 1.6, 1.6, 2.1 in snout, all 1.6 in I-orb, centre of eye 1.2, 1.2, 1.3 times nearer snout tip than hind edge head. Depth maxilla end little less than eye, all 2.1 in snout. P 1.7, 1.8, 1.9; pelvic 1.5, 1.5, 1.8 in head. Peduncle depth about equals eye. Nostrils close together, ½ eye diameter before eye, 2.3 times as far from snout tip as eye. Low but distinct ridge median predorsal. Maxilla to below front or middle of pupil. L.l. little curved in front, straightens below mid soft dorsal, end on peduncle barely raised. D spines low, 3-4th longest, little more than eye. Front of D and A elevated, height of D lobe 1.2, 1.2, 1.5 in head; 3.5, 3.4, 4.0 in trunk. Last D & A ray prolonged, more with age, almost to Cd pit. 2nd D origin 1.2, 1.2, 1.25 times further from origin of upper Cd lobe than snout tip. A origin all 1.7 times as far from origin lower Cd lobe as snout tip. Pelvic origin well behind P origin, P tip not to level of 2nd D origin, Cd lunate. Colour alive: body mauve, darker above, a darker area from D origin, wider forward to snout. Less than eye width yellowish stripe from snout below eye along above P to Cd base, covering straight part of L.l. P, D, A and ventral yellowish, mauve basally, Cd mauve with narrow yellow edge. Iris silvery yellow.

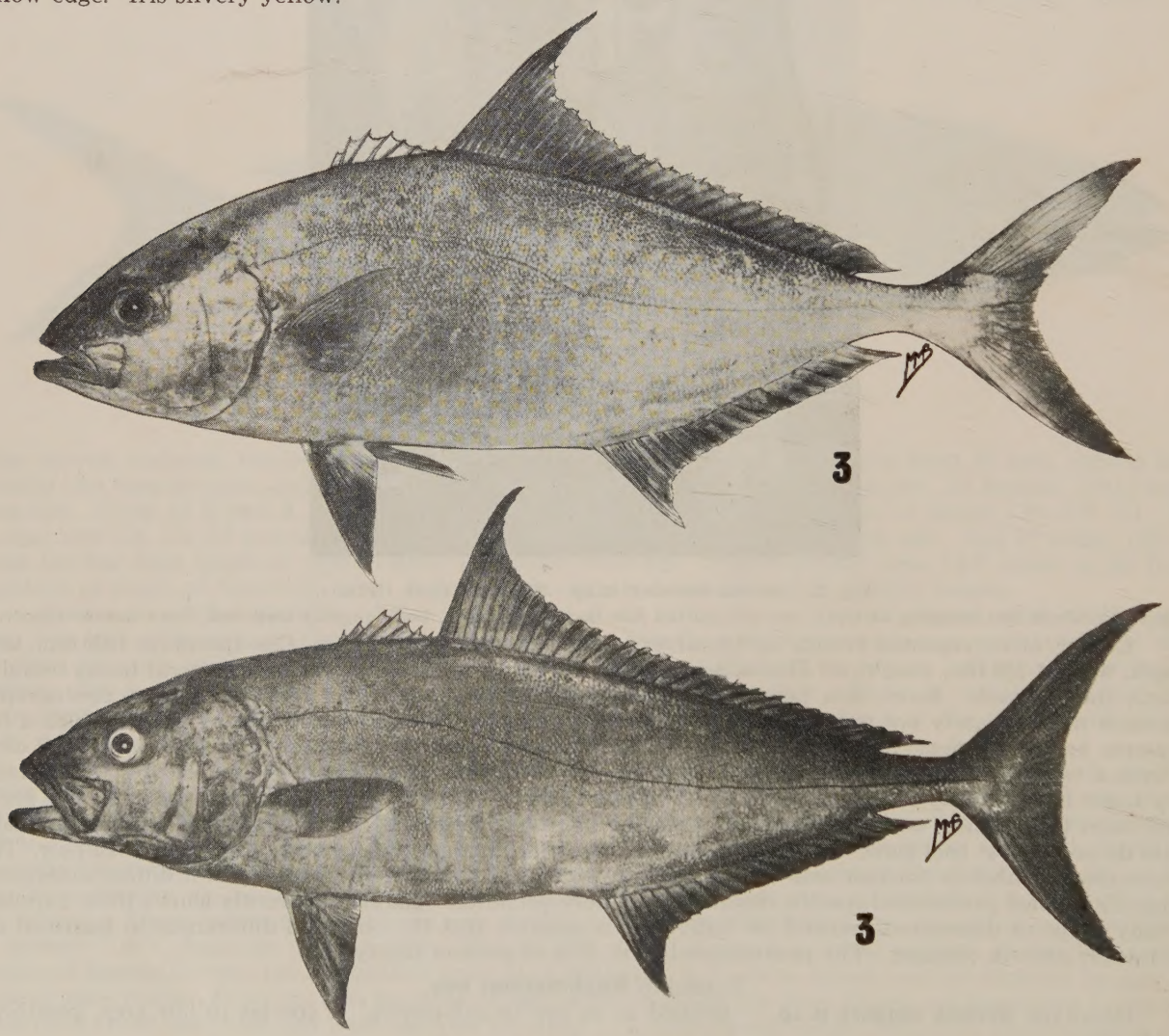


Fig. 3. **Seriola songoro n. sp.**
Above, Type, 505 mm. (Knysna). Below, 880 mm. (Shimoni).

Taken on lines in water of moderate depth, we found it over the whole W. Indian Ocean, nowhere more than an occasional catch, evidently tropical, odd specimens regularly taken in South African waters as far

west as Knysna (34°S), but not yet found at or near the Cape. Native fishermen of Zanzibar and Kenya (3° Southwards) named this species Songoro. Closely related to the W. Atlantic **rivoliana** C & V, (**bonariensis** C & V) at present held to be distinct, as no detailed descriptions nor reliable illustration of that species available.

**Seriola bovinoculata n. sp.**

? **Seriola dumerilii** Risso, Baissac 1956, 362. D VII+I 28. A II+I 20. Depth equals head, 3.25 in body to end of keel on Cd. Eye 5.3 in head, 2 in snout, centre of eye 1.3 times further from hind edge head than snout tip. Depth maxilla end equals eye, 2 in snout. P equals ventral, 2 in head. Peduncle depth less than eye. Maxilla barely below front of eye. L.l. with short high arch in front, straightens on mid side just before mid dorsal, end as distinct keel on peduncle. Front of D & A elevated, height of D lobe 1.4 in head, 3.1 in trunk. Last D & A ray prolonged, reach caudal pit. 2nd D origin 1.1 times further from origin upper Cd lobe than snout tip : A origin almost twice as far from snout tip as origin lower Cd lobe. Pelvic origin below P base, tip of P reaches below 2nd D origin.

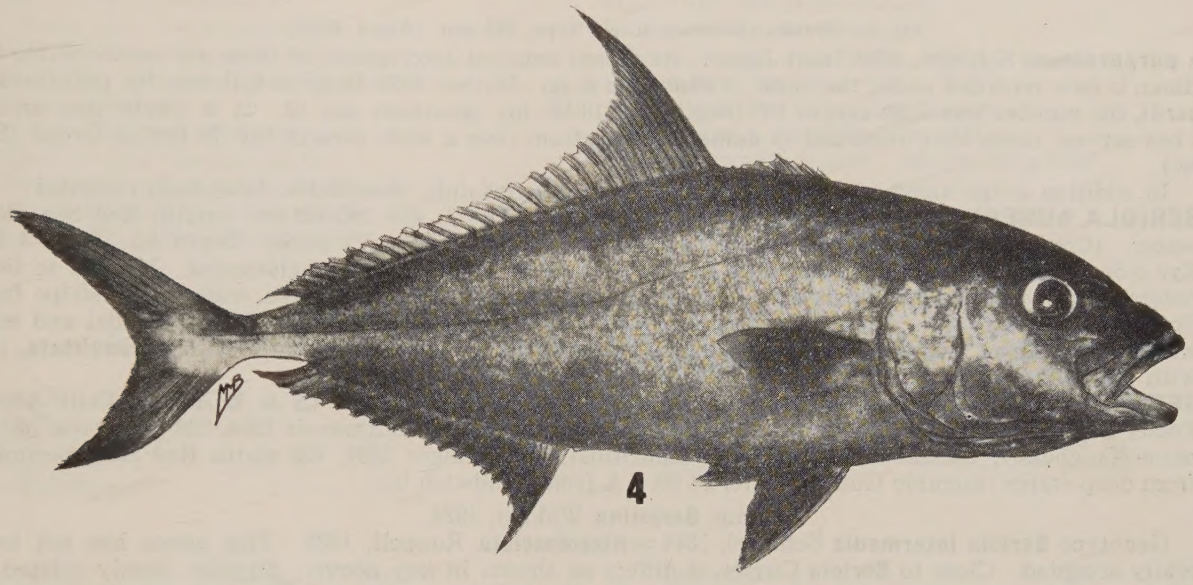


Fig. 4. **Seriola bovinoculata n. sp.** Type, 1150 mm. (Pinda, Moz.).

Live colour: dark olive mauve along back, bordered below by narrow salmon zone, below this a $\frac{2}{3}$ eye wide yellow stripe from eye to Cd base ending in a more than eye size rounded yellow area. Lower half of body dull salmon red, grading to silver at peduncle. Top of head from D origin through eye to snout dark olive, cheek, opercle and hind end maxilla dull salmon red. D dusky olive, A basally hyaline, fin olive yellow, narrow margin white, Cd dusky. P olive yellow. Pelvic spine hyaline, fin olive. Described from the type, 1150 mm. total length, taken on bottom in 80 fathoms off Pinda, Moz. (14°S). Between landing and arrival at Pinda lighthouse, where we lived and worked, this specimen vanished without trace, a not uncommon event with native assistants, despite every care. The type is the photograph in Fig. 4. Clearly distinguished from the related **songoro** by longer head, and deeper body in the adult, as well as other features in key. This species is rare, but well known in Mozambique, where it is named "Olho-de-Bois" (Ox-eye) by Portuguese line fishermen. A premier table fish, the flesh being excellent. I suspect that it is this fish that Baissac 1956, 362 describes from Mauritius as **S. dumerili** Risso, stating D VII I 27. A II+I 22. Rakers 7+16. Head 3, depth 3 in body. Eye 5 in head. Grey, golden band from eye to tail, oblique green band through eye. No length given. A count of 27 for 2nd D is lower than any yet given in this genus.

Subgenus **Seriola** Cuvier, 1817.

**Seriola rhombica n. sp.**

D I+VII+I 32. A I+I 20, (a single stout A spine in front). P 2, 19. 5+1+13 formed gillrakers. Depth 3.3, head 3.5 in body, depth 3.8 to end mid Cd rays. Eye 5.3 in head, 1.9 in snout, 1.7 in I-orb, centre of eye 1.2 times nearer snout tip than hind margin head. Both pectorals broken, pelvic 1.7 in head. Peduncle depth equals eye. Nostrils close together, 1.5 times further from snout tip than eye. Maxilla below front of pupil, depth at end 1.9 in snout. L.l. little curved, feebly undulate, straightens on mid side above A origin, no keel at Cd base. D spines low, 3-4 longest, 1.3 times eye. Front of 2nd D barely elevated (broken?), height 2.2 times in head, A lobe similar, elongate, last ray each fin to Cd pit. 2nd D origin 1.1 times further from origin upper Cd lobe than snout tip, of anal lobe 2.2 further from snout tip than origin lower Cd lobe. Pelvic origin below hind edge P base. Live colour unknown, preserved uniform brown. One, only, Algoa Bay, 245 mm. total, 210 mm. standard length. This could be identified with the Atlantic **dumerili** Risso, 1810 or

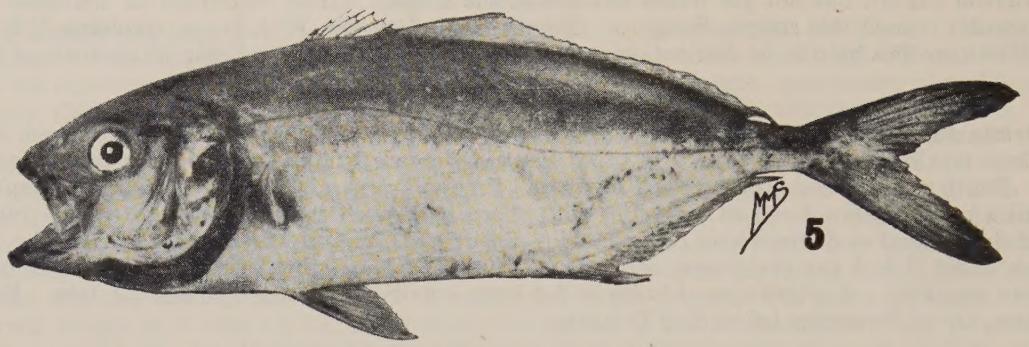


Fig. 5. **Seriola rhombica n. sp.** Type, 245 mm. (Algoa Bay).

with **purpurascens** Schlegel, 1844 from Japan. As recent detailed descriptions of these are not available the specimen is now recorded under the name of **rhombica n. sp.** Mather 1958, 10 gives full data for gillrakers of **dumerili,** the number less with age, at 10″ length it is 13-16, my specimen has 19. It is likely this species that has several times been recorded as **dumerili** Risso from over a wide area of the W. Indian Ocean (See below).

In addition to the above, the following, not at present certainly identifiable, have been recorded :

1. **SERIOLA AUREOVITTATA** (Schlegel, 1844?). Klunzinger 1871, 450. 50-100 cm. length; Red Sea, deep water. (Compiled). D VII+I 31. A II+I 20. P 21. L.l. about 160. Tr 24/46. Depth 4-5. Head 4 1/5. Eye 5-5½. P and pelvic half head. D & A lobes half body depth, last rays elongated. Maxilla to little before mid eye, its width equals eye. Colour silvery, blue or dark grey above, wide brassy stripe from lips through eye to tail. Fins yellow to brown. 1st D greenish, 2nd darker. Tips of caudal and edge white. Klunzinger was doubtful of its identity, stating that it agreed generally with **aureovittata,** less with **lalandii.**
2. **SERIOLA DUMERILI** Risso: (Records only). Steindachner 1902(07), 165 (S & E Arabia: Gulf Aden). Fraser-Brunner 1952, 185 (Somaliland, native name Mogadiscio): Fourmanoir 1954, 220 (Comores, native name Nangoussi): Baissac 1957, App B, IV (Mauritius). Klunzinger 1884, 103 states Red Sea specimens from deep water resemble Gunther 1876, Pl 90, f A from Sandwich Is.

Genus **Seriolina** Wakiya, 1924.

Genotype **Seriola intermedia** Schlegel, 1844 = **nigrofasciata** Ruppell, 1828. This genus has not been generally accepted. Close to **Seriola** Cuvier, it differs as shown in key above. Equally closely related to **Zonichthys** Swainson, 1839, type **Scomber fasciata** Bloch, 1793 from Atlantic, **Seriolina** differs in having rudimentary gillrakers.

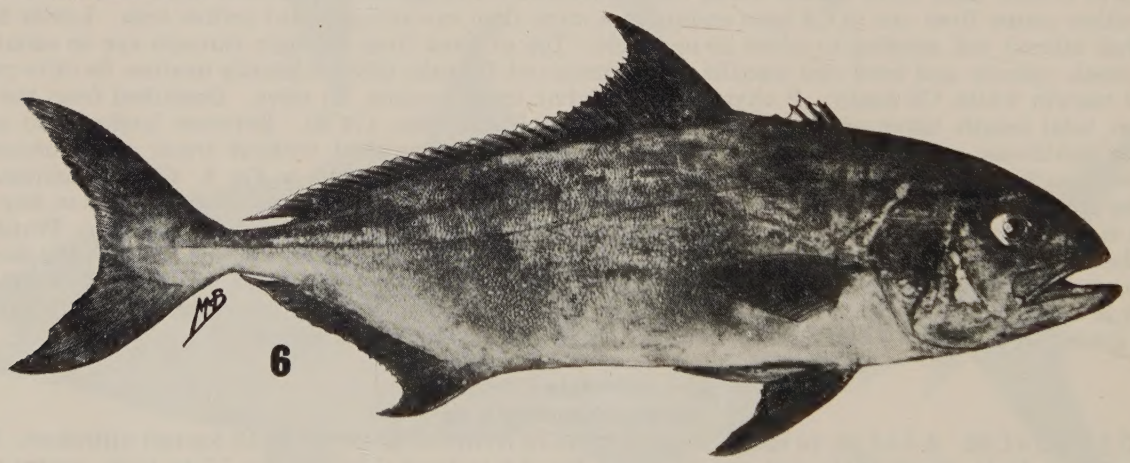


Fig. 6. **Seriolina nigrofasciata** (Rupp.), 610 mm. (Zanzibar).

SERIOLINA NIGROFASCIATA (Ruppell), 1828. **Nomeus nigrofasciata** Ruppell 1828, 92, pl 24, f 2 (Red Sea). As **Seriola** or **Zonichthys nigrofasciatus,** numerous records over W. Ind. Ocean: juv. in Smith 1949, 221, Pl 24, f 536: adult in Smith 1953, Pl 105, f 536. Young with dark crossbars, rounded blunt snout, maxilla below hind part eye, long pelvics, as in Smith 1949, Pl 24, f 536. With age changes occur, body less deep, snout less rounded, pelvics and maxilla shorten, and dark bars disappear. Adult form apparently not figured previously, except Smith 1953, Pl 105. 2 specimens, 370 mm., Algoa Bay, and 610 mm., Zanzibar, described below, data in that order. D VI+I 36 : V+I 37 (rudimentary 6th spine). A (defective): O+I 16. P 2, 17.

Gillrakers low knobs, well apart, 7: 7: on lower limb, none on front 3rd. Depth 3.2; 3.6; head 3.7, 3.8 in body. Eye 5: 5 in head, 2 in I-orb. P 1.5, 1.5; pelvic 1.15; 1.3 in head, apex to or beyond halfway to A origin. 1st D well ahead of 2nd, D lobe 2.6, 2.6 in base of 2nd D, 1.5 in head. A lobe (missing), 2 in head in larger, A base 2.1 in 2nd D base. P apex eye width beyond 2nd D origin. Head scales concealed, end above preopercle edge, on upper part opercle few lanceolate scales, also those on cheek. Maxilla depth about half eye. Nostrils adjacent, 1.2 times further from snout tip than eye. Mostly dusky, bronze sheen above, lighter below, iris reddish, fins dark, only P yellowish. Widespread but rather rare, extends to Pacific, we found it over whole W. Indian Ocean, rarely reaches Algoa Bay (34°S). Esteemed as a table fish, stated to attain 1000 mm. Zanzibar native name Nyangusi.

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